Please amend the identified application, as follows:

IN THE CLAIMS:

1-25. (Canceled)

26. (Currently Amended) An ion conducting composite direct methanol fuel cell membrane material consisting of a polymeric matrix filled with oriented particles of ~~cation~~ layered type proton conducting zirconium phosphate of the general formula $Zr(O_3POH)_2$ or zirconium phosphate sulfoarylene phosphonate; wherein the particles are presented in a mixtures of large and small dies and are exfoliated to a thickness from ca. 5 nm to 100 nm.

27-28. (Canceled)

29. (Currently Amended) The membrane material according to claim 26 wherein the zirconium phosphate sulfoarylene phosphate is a zirconium phosphate of the general formula $Zr(O_3POH)_{2-x}(O_3P\text{-}Ar)_x$, where Ar is a sulfoarylen group and $0 \leq x$.

30. (Canceled)

31. (Currently Amended) The membrane material according to claim ~~28~~ 26 wherein the modified zirconium phosphate is a zirconium phosphate sulfoarylenphosphonate $Zr(O_3POH)_{2-x}(O_3P\text{-}Ar)_x$ wherein Ar is a sulfoarylen group and $0 < x \leq 2$.

32. (Currently Amended) The membrane material according to claim 26 wherein the conductivity of the membrane material containing ~~optionally modified zirconium phosphate~~ the layer particles is $>5x10^{-4}$ S cm^{-1} at temperatures of 0°C to 200°C and a relative humidity of 100%.

33. (Currently Amended) The membrane material according to claim 26 wherein the conductivity of the membrane containing ~~optionally modified~~ zirconium phosphate sulfoarylene phosphonate is $>10^{-2}$ S cm^{-1} at 70°C and 95% relative humidity.

34. (Previously Presented) The membrane material according to claim 26 wherein the polymeric matrix of the membrane material is that of an ionomer.

35. (Previously Presented) The membrane material according to claim 26 wherein the polymeric matrix of the membrane material is that of a proton conducting ionomer.

36. (Currently Amended) The membrane material according to claim 26 wherein the polymeric matrix of the membrane material is at least one synthetic ionomer selected from the ~~of~~ the group consisting of perfluorosulfonic polymers, sulfonated polyvinylidenfluoride, sulfonated polyetherketones, sulfonated polybenzimidazoles, sulfonated polyphenylsulfones, sulfonated polysulfones and sulfonated polyethersulfones.

37. (Currently Amended)The membrane material according to claim ~~31~~ 26 wherein the zirconium phosphate

sulfoarylenphosphonate contains at least one phosphonate group bonded to the zirconium atom.

38. (Currently Amended) The membrane material according to claim ~~31~~ 26 wherein the sulfoarylenphosphonate group is meta-sulfophenylenphosphonate.

39. (Cancelled)

40. (Currently Amended) The membrane material according to claim 26 wherein the amount of ~~optionally modified~~ zirconium phosphate sulfoarylene phosphonate in the membrane material is 0.5%-70% by weight.

41. (Currently Amended) A method for the preparation of the proton conducting composite membrane material according to claim 26 based on the following steps: a) preparation of ~~a~~ layered particles of ~~optionally modified~~ zirconium phosphate zirconium phosphate sulfoarylene phosphonate in the form of a mixture of small and large dies by exfoliation of the phosphates in aqueous solution by interclalation -deintercalation of an alylamine, b) preparation of a colloidal dispersion of the ~~optionally modified zirconium phosphate~~ layered particles in a suitable organic solvent or mixture of organic solvents, c) ~~transfer~~ transferring of the ~~optionally modified zirconium phosphate~~ layered particles from the said colloidal dispersion to a solution of a polymer by mixing, d) forming membrane materials by using the obtained mixture and eliminating the solvent.

42. (Currently Amended) The method for the preparation of the proton conducting composite membrane material according to claim 41 wherein the polymer is ~~a~~ an ionomer.

43. (Currently Amended) The method for the preparation of the proton conducting composite membrane material according to claim 41 wherein the polymer is ~~a~~ an ionomer of the membrane material is that of a proton conducting ionomer.

44. (Currently Amended) The method for the preparation of the proton conducting composite membrane material according to claim 41 is at least one synthetic ionomer selected from ~~of~~ the group consisting of perfluorosulfonic polymers, sulfonated polyvinylidenfluoride, sulfonated polyetherketones, sulfonated polybenzimidazoles, sulfonated polyphenylsulfones, sulfonated polysulfones and sulfonated polyethersulfones.

45-46. (Cancelled)

47. (Currently Amended) The method for the preparation of the proton conducting composite membrane materials according to claim ~~45~~ 41 wherein the mixture containing the polymer and the ~~optionally modified α-zirconium phosphate~~ layered particles is obtained by mixing the ionomer solution with the colloidal dispersion of the layered ~~α-zirconium phosphate or zirconium phosphate sulfoarylenphosphonate~~ particles.

48. (Currently Amended) The method for the preparation of

the proton conducting composite membrane material according to claim 41 wherein the colloidal dispersion of the ~~optionally modified α-zirconium phosphate~~ layered particles is obtained by using at least one organic solvent selected from the group consisting of N,N'-dimethylformamide, N-methyl-2-pyrrolidone, dimethylsulfoxide, acetonitrile and alkanols, preferably N,N'-dimethylformamide and/or N-methyl-2-pyrrolidone, or their mixtures or water or mixtures of water and organic solvent.

49. (Previously Presented) The method for the preparation of the proton conducting composite membrane material according to claim 41 wherein a ionomer solution and the colloidal dispersion are prepared in the same solvent or in different solvents, provided that the mixing of the solution with the dispersion does not cause colloid flocculation or ionomer precipitation.

50. (Cancelled)

51. (Currently Amended) The method for the preparation of the proton conducting composite membrane material according to claim 41 wherein the mixture containing an ionomer and the layered ~~α-zirconium phosphate or zirconium phosphate sulfoarylenphosphonate~~ particles is obtained by "phase transfer".

52. (Cancelled)

53. (Previously Presented) The method for the preparation of the proton conducting composite membrane materials

according to claim 41 wherein the solvent is removed from the polymer-colloid mixture by evaporation.

54. (Cancelled)

55. (Previously Presented) The method for the preparation of the proton conducting composite membrane material according to claim 41 wherein the solvent is removed from the polymer-colloid mixture by the use of a non-solvent, preferably water.

56. (Cancelled)

57. (Currently Amended) Composite membrane material of claim 26 in the form of an ionomeric membrane material with at least one of high mechanical properties and ~~decreasing~~ decreased methanol permeability.

58. (Previously Presented) Composite membrane material of claim 26 in the form of an ionomeric membrane material with high overall performance in ~~hydrogen, in indirect and in~~ direct methanol fuel cells.

59-60. (Cancelled)

61. (Previously Presented) Direct methanol fuel cell containing a composite membrane material according to claim 26.

62. (New) The membrane material according to claim 26 wherein the large dies have diameter in the range from 0.1 to 10 nm.

63. (New) The membrane material according to claim 26 wherein the membrane material has a thickness between 10 nm and 100 nm.

64. (New) An ion conducting composite direct methanol fuel cell membrane material consisting of a polymeric matrix filled with a mixture of large and small lamellar oriented particles of layered type proton ~~cation~~ conducting zirconium phosphate sulfoarylene phosphonate of the general formula $Zr(O_3POH)_{2-x}(O_3P\text{-}Ar)_x$;

wherein Ar is a sulfoarylene group and $0 \le x \le 2$; and

wherein the particles are exfoliated to a thickness ranging from 5 nm up to 100 nm and exhibit a surface up to 10 μm^2.

65. (New) The membrane material according to claim 64 wherein the modified zirconium phosphate is a zirconium phosphate sulfoarylenphosphonate $Zr(O_3POH)_{2-x}(O_3P\text{--}Ar)_x$ wherein Ar is a sulfoarylen group and $0<x\le 2$.

66. (New) The membrane material according to claim 64 wherein the conductivity of the membrane material containing optionally modified zirconium phosphate is $>5x10^{-4}$ S cm^{-1} at temperatures of 0°C to 200°C and a relative humidity of 100%.

67. (New) The membrane material according to claim 64 wherein the conductivity of the membrane containing

zirconium phosphate sulfoarylene phosphonate is $>10^{-2}$ S cm^{-1} at 70°C and 95% relative humidity.

68. (New) The membrane material according to claim 64 wherein the polymeric matrix of the membrane material is that of an ionomer.

69. (New) The membrane material according to claim 64 wherein the polymeric matrix of the membrane material is that of a proton conducting ionomer.

70. (New) The membrane material according to claim 64 wherein the polymeric matrix of the membrane material is at least one synthetic ionomer selected from the the group consisting of perfluorosulfonic polymers, sulfonated polyvinylidenfluoride, sulfonated polyetherketones, sulfonated polybenzimidazoles, sulfonated polyphenylsulfones, sulfonated polysulfones and sulfonated polyethersulfones.

71. (New) The membrane material according to claim 64 wherein the sulfoarylenphosphonate group is meta-sulfophenylenphosphonate.

72. (New) The membrane material according to claim 26 wherein the amount of zirconium phosphate sulfoarylene phosphonate in the membrane material is 0.5%-70% by weight.

73. (New) A method for the preparation of the proton conducting composite membrane material according to claim 26 based on the following steps: a) preparation of ~~a~~

layered zirconium phosphate sulfoarylene phosphonate of the general formula $Zr(O_3POH)_{2-x}(O_3P\text{-}Ar)_x$, wherein $0 \leq x \leq 2$, in the form of a mixture of small and large particles by direct exfoliation in aqueous solution by intercalation - deintercalation of an alkylamine, b) preparation of a colloidal dispersion of the layered particles in a suitable organic solvent or mixture of organic solvents, c) transferring of the layered particles from ~~the~~ said colloidal dispersion to a solution of a polymer by mixing, d) forming membrane materials by using the obtained mixture and eliminating the solvent.

74. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein the polymer is an ionomer.

75. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein the polymer is an ionomer of the membrane material is that of a proton conducting ionomer.

76. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 is at least one synthetic ionomer selected from the group consisting of perfluorosulfonic polymers, sulfonated polyvinylidenfluoride, sulfonated polyetherketones, sulfonated polybenzimidazoles, sulfonated polyphenylsulfones, sulfonated polysulfones and sulfonated polyethersulfones.

77. (New) The method for the preparation of the proton conducting composite membrane materials according to claim

73 wherein the mixture containing the polymer and the layered particles is obtained by mixing the ionomer solution with the colloidal dispersion of the layered particles.

78. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein the colloidal dispersion of the layered particles is obtained by using at least one organic solvent selected from the group consisting of N,N'-dimethylformamide, N-methyl-2-pyrrolidone, dimethylsulfoxide, acetonitrile and alkanols, preferably N,N'-dimethylformamide and/or N-methyl-2-pyrrolidone, or their mixtures or water or mixtures of water and organic solvent.

79. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein a ionomer solution and the colloidal dispersion are prepared in the same solvent or in different solvents, provided that the mixing of the solution with the dispersion does not cause colloid flocculation or ionomer precipitation.

80. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein the mixture containing an ionomer and the layered particles is obtained by "phase transfer".

81. (New) The method for the preparation of the proton conducting composite membrane materials according to claim

73 wherein the solvent is removed from the polymer-colloid mixture by evaporation.

82. (New) The method for the preparation of the proton conducting composite membrane material according to claim 73 wherein the solvent is removed from the polymer-colloid mixture by the use of a non-solvent, preferably water.

83. (New) Composite membrane material of claim 73 in the form of an ionomeric membrane material with at least one of high mechanical properties and decreased methanol permeability.

84. (New) Composite membrane material of claim 73 in the form of an ionomeric membrane material with high overall performance in hydrogen, in indirect and in direct methanol fuel cells.

85. (New) Direct methanol fuel cell containing a composite membrane material according to claim 73.

86. (New) The membrane material according to claim 73 wherein the membrane material has a thickness between 10 and 100 nm.